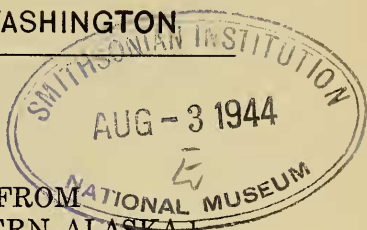


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTONFOUR NEW ERMINES FROM
THE ISLANDS OF SOUTHEASTERN ALASKA¹

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Four previously unrecognized kinds of weasels have been found on the islands of southeastern Alaska. The degree of morphological difference between any two kinds on adjoining islands is about the same as between a pair of related subspecies on the adjacent mainland. For this reason the insular forms are regarded as subspecies rather than distinct species although geographical intergradation is obviously impossible. All four are members of the group of short-tailed weasels to which the specific names *cicognanii*, *richardsonii*, *streatori* and *arctica* have been applied in recent years. As will be shown in a later and a more extensive paper, each of the above-mentioned weasels is a geographic race of a circum-boreal species of which the Old World ermine, *Mustela erminea*, was the first named and that name therefore is used for the name of the species as a whole.

The new subspecies may be described and named as follows:

Mustela erminea salva, new subspecies.

Type.—Male, adult, skull-alone; no. 74641, Mus. Vert. Zool.; Mole Harbor, Admiralty Island, Alaska; December 27, 1936; obtained by Allen E. Hasselborg.

Range.—Admiralty Island, Alaska.

Diagnosis.—Size: An adult male from Gambier Bay and a subadult female from Hawk Inlet, measure, respectively: Total length, 320, 250; length of tail, 95, 70; length of hind foot, 45 (41 dry), 33.

Color: Winter pelage all white except tip of tail. Summer pelage with upper parts uniform in color and darker (16 *n*) than Raw Umber of Ridgway (Color Standards and Color Nomenclature, Washington, D. C.,

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1912) and Chocolate tones 3 to 4, of plate 343 of Oberthür and Dauthenay (*Répertoire de Couleurs*, Rennes, Imp. Oberthür, Paris, Libraire horticoles, 1905). Underparts Colonial Buff to Primrose Yellow of Ridgway (*op. cit.*), nearly white on chin and insides of forelegs; color of underparts extends narrowly over upper lips, distally on posterior sides of forelegs onto antipalmar faces of toes and sometimes over most of antipalmar surface of forefeet, on medial sides of hind legs to a point between knee and ankle but reappears on antiplantar faces of toes and in some individuals is narrowly continuous onto toes. Least width of color of underparts in four individuals 40 (38-43) per cent of greatest width of color of upper parts. Black tip of tail, in two individuals of which external measurements are given above, 50 and 40 mm. long, respectively, which is 53 and 57 per cent of length of tail-vertebrae.

Skull (based on 5 adult males, 2 adult females, and 1 subadult female, all from the type locality): Weight, including lower jaws, 1.7 (1.5-1.9) grams in males and 0.9 (0.8-1.0) grams in females; basilar length, 37.8 (36.4-39.5) mm. in males and 33.0 (32.0-33.6) mm. in females; length of upper tooth rows about equal to length of tympanic bulla in each sex; breadth of rostrum measured across lacrimal processes less than a third of basilar length in males and about 30 per cent of basilar length in females; interorbital breadth in males rarely more, and in females always less, than distance between glenoid fossa and posterior border of external auditory meatus; zygomatic breadth less than distance between last upper molar and jugular foramen in each sex.

Comparisons.—From *Mustela erminea alascensis* of the adjacent mainland, which the newly named subspecies most closely resembles among named kinds, *salva* differs in that males have the preorbital region slightly wider in relation to the length of the tympanic bullae and the brain case is smaller, actually as well as in comparison with the preorbital part of the skull. The tympanic bullae do not project as far below the squamosals and the brain case itself is shallower, averaging, in adults, 11.5 mm. as against 12.5 mm. The overall depth of the brain case, including the tympanic bullae, when divided into the orbitonasal length gives an average figure of 93 (90-97) per cent whereas in *alascensis* the figure is only 85 (78-88) per cent. On this basis alone, every one of the adult skulls of the two races can be distinguished. The females and subadult males show the same tendency to reduction in the brain case but not every individual among them can be surely distinguished. By weight, the skull of corresponding sex is only about 6 per cent smaller. Comparison with *M. e. initis* and *M. e. celenda* are made in the accounts of those subspecies.

Specimens examined.—Total number, 26, all from Admiralty Island, Alaska. Unless otherwise indicated specimens are in the Museum of Vertebrate Zoology. Hawk Inlet, 2; Seymour Canal, 4; Mole Harbor, 18 (skulls-alone); Gambier Bay, 1; no locality more definite than Admiralty Island, 3 (1 in U. S. Nat. Mus.).

Mustela erminea initis, new subspecies.

Type.—Male, adult, skull with skin; no. 289, Mus. Vert. Zool.; Saook Bay, Baranof Island, Alaska; October 9, 1907; obtained by Allen E. Hasselborg, original no. 4.

Range.—Chichagof and Baranof islands, Alaska.

Diagnosis.—Size: Two adult males, type and a topotype, measure respectively as follows: Total length, 330, 320; length of tail, 95, 95; length of hind foot, 45, 45. No external measurements of female available.

Color (based on 2 young females): As described in *Mustela erminea salva* except that: Least width of color of underparts 49 and 50 per cent of greatest width of color of upper parts. Black tip of tail in three young female topotypes averaging 54 (52–55) mm. which is 67 (63–69) per cent of length of tail-vertebrae.

Skull of male (illustrated by the type and one adult topotype): Weight, 2.3 and 2.5 grams; basilar length 39.6 and 40.5 mm.; length of upper tooth rows less than length of tympanic bulla; breadth of rostrum measured across lacrimal processes less than a third of basilar length; interorbital breadth equal to distance between glenoid fossa and posterior border of external auditory meatus; zygomatic breadth less than distance between last upper molar and jugular foramen. No skull of adult female available.

Comparisons.—From *M. e. salva, initis* differs in that skulls of males average larger in every measurement taken and are 41 per cent heavier. In relation to the basilar length, the interorbital and preorbital parts of the skull are larger; the greater widths, in relation to the basilar length, of the interorbital region and across the mastoidal processes are especially noticeable. Although the depth of the brain case, including the tympanic bullae, is both relatively as well as actually more than in *salva*, the depth is relatively less than in *alascensis* which otherwise differs from *initis* in about the same way that *salva* differs from *initis*. Whereas the interorbital breadth in *initis* is about equal to the distance between the glenoid fossa and the posterior border of the external auditory meatus, the interorbital breadth is uniformly less than this distance in both *salva* and *alascensis*. In comparison with *seclusa* the teeth are of the same size but all measurements of the skull are larger, and the skull of *initis* is 25 per cent heavier. In relation to the basilar length, the interorbital and preorbital parts of the skull are much smaller in *initis*. Comparison with *celenda* is made in the account of that form.

Remarks.—The one specimen available from Chichagof Island, though labeled a male, probably is a female. In it the medial side of the tympanic bulla is fuller (less scooped out) than in any one of the three specimens probably females, of corresponding age, from Baranof Island. Additional specimens from these two islands, especially from Chichagof Island, will be required to learn if ermines are subspecifically the same on the two islands.

Specimens examined.—Total number, 6, all in the Museum of Verte-

brate Zoology. Chichagof Island, Freshwater Bay, 1. Baranof Island, Saook Bay, 5.

Mustela erminea celenda, new subspecies.

Type.—Male, adult, skull and skin; no. 130987, U. S. National Mus., Biol. Surv. Coll.; Kasaan Bay, Prince of Wales Island, Alaska; June 16, 1903; obtained by Cyrus Catt; original no. 4407x.

Range.—Prince of Wales, Dall, and Long islands, Alaska.

Diagnosis.—Size: Seven males, adults and subadults, from Prince of Wales Island, have average and extreme measurements as follows: Total length, 286 (277–304); length of tail, 77 (74–85); length of hind foot, 36 (35.5–40.5). No females known.

Color: As described in *Mustela erminea salva* except that upper parts about tone 3 of dark chocolate brown of plate 342 of Oberthür and Douthenay (*op. cit.*); lower throat and chest covered by a large patch of same color as upper parts; color of underparts extending to toes but in interrupted fashion on both fore- and hind-feet; least width of color of underparts averaging, in four males from Prince of Wales Island, 41 (38–40) per cent of greatest width of color of upper parts. Black tip of tail averaging, in 8 males in winter pelage, 65 (59–78) mm. which is 84 (69–92) per cent of length of tail-vertebrae.

Skull (illustrated by 5 adult males): As described in *Mustela erminea initis* except that: Weight, 2.3 (2.2–2.5) grams; basilar length, 39.5 (38.9–40.7) mm.; length of upper tooth rows more than length of tympanic bulla; breadth of rostrum measured across lacrimal processes more than a third of basilar length; interorbital breadth more than distance between glenoid fossa and posterior border of external auditory meatus; zygomatic breadth more or less than (about equal to) distance between last upper molar and jugular foramen. No complete skull of adult female available.

Comparisons.—From its geographic neighbors, *alascensis* and *initis*, *celenda* differs in darker color of upper parts, presence rather than absence of patch of dark color on lower throat and chest, and longer black tip on the tail. From *Mustela erminea haidarum* of the Queen Charlotte Islands, British Columbia, to the south, *celenda* differs in darker color of upper parts, presence rather than absence of patch of dark color on lower throat and chest, narrower light-colored underparts, black tip of tail averaging less rather than more than nine-tenths of length of tail-vertebrae, and ventral face of tail colored like upper parts rather than like underparts.

In addition to the cranial differences noted between *initis* and *celenda* in the above diagnosis, *celenda* differs also in larger interorbital and pre-orbital parts of the skull although dimensions of other parts of the skull and of the teeth are about the same or even less. From *salva*, differences are larger average size in every measurement taken save that of the diameter of the inner lobe of the upper molar which is about the same. The skull of *celenda* is 35 per cent heavier than that of *salva* and in rela-

tion to the basilar length is wider, particularly in the interorbital and preorbital regions. From *seclusa*, in which the teeth are of comparable size, *celenda* differs in that every cranial measurement is larger and the skull with the lower jaws is 28 per cent heavier. The skull of *celenda* is much longer than in *seclusa* and the width and depth in relation to the length, are less than in *seclusa*. *M. e. celenda* is larger in every part measured than *Mustela erminea haidarum*, 21 per cent heavier, and in relation to the basilar length the interorbital, and preorbital, parts of the skull are smaller, the brain case is shallower, and the skull is relatively wider across the zygomata and mastoid processes.

Remarks.—In both coloration and cranial characters the distinguishing features are pronounced and this ermine might well be accorded the rank of a full species were it not for other insular races, for example *initis*, which tends to bridge the gap between *celenda* and the race *alascensis* on the mainland. The specimen from Dall Island agrees in all respects with topotypes. The one from Howkan on Long Island is a white winter-skin with remains of a skull that suffered shrinkage from some chemical solution, and the reference of this specimen to *celenda* is tentative.

Specimens examined.—Total number, 25, all from Alaska. Arranged by localities from north to south and unless otherwise noted in the United States National Museum. *Prince of Wales Island*: Craig, 18 (10 in Mus. Vert. Zool., and 8 in Los Angeles Mus. Hist. Art and Sci.); Kasaan Bay, 2; no locality more definite than the Island itself, 3. *Dall Island*: Otter Harbor, 1 (Los Angeles Mus. Hist. Art. and Sci.). *Long Island*: Howkan 1 (Field Mus. Nat. Hist.).

Mustela erminea seclusa, new subspecies.

Type.—Male, adult, skull-alone; no. 31232, Mus. Vert. Zool.; Port Santa Cruz, Sumez Island, Alaska; March 24, 1920; obtained by George Willett.

Range.—Known only from the type locality.

Diagnosis.—Skull of male as described in *Mustela erminea initis* except that: Weight, 1.8 grams; basilar length, 34.3; length of upper tooth rows about same as length of tympanic bulla; breadth of rostrum measured across lacrimal processes more than a third of basilar length; interorbital breadth more than distance between glenoid fossa and posterior margin of external auditory meatus; zygomatic breadth more than distance between last upper molar and jugular foramen. Female unknown as likewise are external measurements and skin of male.

Comparisons.—From *alascensis* and *salva*, *seclusa* differs in larger teeth, shorter skull, much larger preorbital and interorbital regions, actually as well as in relation to the basilar length. Except the teeth, which are of about the same size, the same general differences obtain in comparison with *initis* which, however, is 29 per cent heavier. From *celenda*, *seclusa* differs in smaller skull in all parts measured, being 22 per cent lighter. The teeth are about the same size. In relation to its

length, the skull of *seclusa* is much broader and deeper. From *Mustela erminea haidarum*, *seclusa* differs in: teeth larger; skull shorter and more convex in dorsal outline along median longitudinal axis. Also, in relation to the basilar length, the skull is broader and deeper and the brain case is relatively shorter.

Remarks.—The characters shown in the one available skull are so far outside the limits of variation for other known races that confidence is felt in designating a new subspecies for its reception. Other specimens are much to be desired to ascertain what the "average" is like and to learn the subspecific characters of the female.

Specimen examined.—One, the type.

CRANIAL MEASUREMENTS, IN MILLIMETERS, OF ADULT SPECIMENS
FROM THE TYPE LOCALITIES OF FOUR SUBSPECIES OF *MUSTELA ERMINEA*.

(Figures in parentheses are average.)

<i>Catalog no. or no. of individuals averaged</i>	<i>salva</i> ♀		<i>salva</i> ♂		<i>initis</i> ♂		<i>celenda</i> ♂		<i>seclusa</i> ♂	
	74653	74654	12	12	type	286	5	5	type	type
Basilar length of Hensel.....	33.1	32.0	39.5 (37.8)	36.4	40.5	39.6	40.7 (39.5)	38.9	34.3	
Length of upper tooth rows ²	10.9	11.0	13.7 (13.0)	12.5	13.9	13.5	14.4 (14.0)	13.9	12.6	
Breadth of rostrum across lacrimals.....	10.2	9.5	13.0 (11.9)	10.7	12.8	13.1	14.5 (13.6)	13.1	12.6	
Least interorbital breadth.....	8.7	7.5	10.8 (9.6)	8.4	10.6	11.4	12.1 (11.5)	10.9	10.6	
Orbitonasal length ³	11.1	11.4	14.2 (13.3)	12.4	14.4	15.0	15.6 (14.7)	13.8	13.9	
Mastoid breadth.....	16.7	15.4	20.0 (19.2)	18.0	22.1	22.0	21.7 (20.9)	19.9	20.2	
Zygomatic breadth.....	18.7	17.1	23.2 (22.0)	20.4	24.5	24.3	25.8 (24.2)	23.2	22.7	
Length of tympanic bulla.....	11.7	11.0	13.8 (12.8)	12.0	14.8	13.6	14.2 (13.6)	13.2	12.7	
Length of first upper molar.....	3.8	3.9	5.0 (4.6)	4.4	5.2	5.0	5.1 (5.1)	5.0	5.1	
Length of P ⁴ on lateral side.....	3.6	3.7	4.6 (4.3)	4.0	4.7	4.7	4.9 (4.7)	4.6	4.7	
Breadth of first upper molar.....	3.0	2.9	3.9 (3.5)	3.1	4.1	3.6	3.9 (3.7)	3.6	3.8	
Length of first upper molar.....	1.5	1.5	2.0 (1.8)	1.7	1.9	2.1	2.2 (1.9)	1.7	1.8	
Depth of skull at ant. margin of basioccipital.....	9.8	8.9	13.1 (11.7)	11.2	12.8	12.3	13.6 (12.9)	12.3	12.3	
Depth of skull at post border of upper molars.....	9.0	8.4	11.4 (10.7)	10.0	11.0	12.0	12.5 (11.6)	10.8	11.5	

² Along median longitudinal axis of skull from anterior faces of incisors to a line connecting posterior margins of molars.

³ Measured diagonally from posteriormost margin of anterior nares to posterior side of postorbital process near its tip.